ABSTRACT

An edge preservation type of recursive filter 12 outputs an unsharpened image (i.e., low-frequency components) which is smoothed while preserving an edge of an input image in at least one direction (e.g., a vertical direction of the image). The low-frequency components are compressed into a suitable amount by a LUT 14 provided as low-frequency component compression amount setting means and then output. An arithmetic unit 18 provided as low-frequency component compression means compresses the low-frequency components of the input image by subtracting from the input image the output value from the LUT 14. The edge-preservation-type recursive filter 12 can extract the low-frequency components of the input image with an input time delay corresponding to one line of the input image. Therefore, DRC processing has only a short delay due to image processing and is capable of real-time processing by a small amount of computation. In this way, contrast at a medium-to-fine detail of the image such as a catheter can be improved while preventing occurrence of an artifact such as a black region in the processed image.